PROJECT NUMBER: 1101
PROJECT TITLE: Entomological Research
PROJECT LEADER: D. L. Faustini
WRITTEN BY: L. Ryan
PERIOD COVERED: June, 1989

I. METHOPRENE

A. **Objective:** To determine the most efficient use of the insect growth regulator, methoprene within PM's cigarette beetle (CB) management program.

B. **Results**: A study to determine potential methoprene deposition on tobacco during Dianex® applications (1) was completed. This involved 4 replicate Dianex® aerosol applications in D Pilot Plant and the sampling of bright cut filler (CF) at various stages of simulated CF production. Samples of CF were analyzed by ARD personnel using HPLC techniques (2). No residues of methoprene were detected at any time on the production CF.

A document describing the possibility of using ELISA techniques to detect methoprene at <1 ng levels was received (3) and discussed with interested parties at R&D.

C. **Plans**: Evaluate the CF samples for methoprene using CB bioassay techniques and for potential xylene residues. Submit a special report on the study to date. Continue to assist in the integration of methoprene into PM USA's integrated pest management program.

D. **Reference**:

1. Ryan, L. and Lehman, R. M. Proposal: To Study the Potential Methoprene Deposition on Tobacco During Dianex® Applications. Memo to Faustini, D. L. May 22, 1989.

2. Yang, S.-S. Notebook No. 8778 pp. 55-63.

3. Yin, C.-M. of the University of Massachusetts. ELISA for Methoprene Detection. Letter to Lehman, R. M. May 1, 1989.

II. FUMIGATION

A. **Objective**: Investigate alternatives to conventional fumigants for the disinfestation of bulk tobaccos.

B. **Results**: Evaluation of vacuum-steam conditioning as an alternative to methyl bromide for the fumigation of export cut filler (ECF) to obtain phytosanitary certificates (phyto) is underway (1,2). The relevance of the phyto to PM USA's ECF business is being investigated (3).

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C. **Plans**: Gain management approval for research studies aimed at gaining phytos based on probe-equipped vacuum-steam conditioning cycles and assist, as requested, with efforts to move ECF production to Stockton Street.

D. **Reference**:

1. Ryan, L. and Faustini, D. L. Vacuum-steam Conditioning as an Alternative to Methyl Bromide Fumigation of Export Cut Filler to Obtain Phytosanitary Certification. Memo to Distribution. June 5, 1989.

2. Houghton, K. S. R&D's Effort Regarding the Concerns for Cut Filler Fumigation. Memo to Golay, A. May 23, 1989.

3. Ryan, L. Phytosanitary Certificates (Phyto) for Export Cut Filler (ECF). Memo to Charles, V. May 25, 1989.

III. SERVICE TO OTHERS

A. **Objective**: To provide technical services to areas outside R&D.

B. **Results**: Assistance was given in the following areas:

- moisturizing cylinder CB efficacy tests as part of the Bulk Tobacco Handling (BTH) program at the RLPF (1,2), O/C Semi-works (3) and for start-up at Bermuda 100 (4).

- vacuum-steam conditioning CB efficacy tests as part of an engineering project to enhance the safety of conditioning units (5).

Advice was given on sanitation and pest control at the Cabarrus manufacturing facility (6) and the visit from PME's sanitarian was completed (7,8).

C. **Plans**: Continue to gather data, within the BTH program, on the relationship between temperature of and residence time within moisturizing cylinders and CB mortality.

D. **References**:

1. Ryan, L. and Lehman, R. Cigarette Beetle Mortality in a Moisturizing Cylinder at the Richmond Leaf Processing Facility. Memo to Rowe, N. R. May 25, 1989.

2. Ryan, L. Cigarette Beetle Mortality in a Moisturizing Cylinder at the Richmond Leaf Processing Facility. Memo to Grove, M. A. June 1, 1989.

3. Lehman, R. M. and Ryan, L. Cigarette Beetle Mortality in an Operations Center (OC) Semi-works Moisturizing Cylinder. Memo to Rowe, N. R. June 2, 1989.

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4. Ryan, L. Cigarette Beetle Mortality in a Stem Conditioning Cylinder at Bermuda 100. Memo to Werkmeister, P. May 25, 1989.

5. Ryan, L. and Lehman, R. M. Cigarette Beetle Mortality in a Mohr Vacuum-steam Conditioning Unit at the Richmond Manufacturing Center. Memo to Cooper, R. N. May 25, 1989.

6. Faustini, D. L. Sanitation and Pest Control Review - Cabarrus, N. C. Memo to McCuen, R. W. May 18, 1989.

7. Ryan, L. and Faustini, D. L. Visit to Cabarrus by J.-M. Freymond. Memo to Sexton, M. A. and Bridges, C. T. May 8, 1989.

8. Ryan, L. and Faustini, D. L. Letter to Yehman, H. of Degesch America, Inc. April 25, 1989.

IV. OTHER

A variety of meetings were attended by Project 1101 personnel to keep abreast of developments in the fields of insect communication (1,2) and pesticides (3,4).

References:

1. Ryan, L. The Powell Lecture - Summary. Memo to Faustini, D. L. May 25, 1989.

2. Faustini, D. L. 1989 Annual Banquet - ESA Washington, D. C. Memo to McCuen, R. W. May 15, 1989.

3. Minor, M. F. The National Research Conference, Pesticides in Terrestrial and Aquatic Environment - TRIP REPORT. Memo to Faustini, D. L. May 30, 1989.

4. Faustini, D. L. Tobacco Pesticide Committee (TPC) of the Tobacco Workers Conference. Memo to McCuen, R. W. May 15, 1989.

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